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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/663,772

09/17/2003

Volker Braun

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

WIN, AUNG T

ART UNIT

PAPER NUMBER

2617

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/663,772             | BRAUN ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | AUNG WIN               | 2617                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed on 03/10/2009 with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 6-8, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's submitted published document "Evolving WCDMA" by Hedberg et al (hereinafter Hedberg) in view of IEEE published document: "Transmit Diversity applied on the CDMA/TDD cellular system" by Hiramatsu et al. (hereinafter Hiramatsu), and further in view of Malladi et al. (US 2003/0210668 A1) and further in view of Grubeck et al (US006449484B1).

1.1 Regarding Claims 1 & 2, Hedberg discloses a HSDPA system and method of sending first and second signals to a plurality of user equipments, the method comprising the steps of:

Providing a dedicated channel for each one of the plurality of user equipments [associated dedicated control channel DPCH: See General channel structure on Page 129];

Providing a code-multiplexed shared channel for the plurality of user equipments [High Speed Downlink Shared Channel (HS\_DSCH) shared among users by assigning codes to each user: HSDPA: See General channel structure on Page 128-129];

Sending one of first signals (associated dedicated control channel DPCH to one of the plurality of user equipments on one of the dedicated channels (i.e., DPCHs) on a carrier frequency; and

Sending one of the second signals to one of the plurality of user equipments on the code-multiplexed shared channel (i.e., code-multiplexed HS\_DSCH shared channel) on the carrier frequency by applying multi-user diversity through the assigned antenna [sending high speed packet data to the users on code-multiplexed HS\_DSCH shared channel on the carrier frequency by applying multi-user diversity: See HSDPA-Improved support for best-effort services on Page 128-129] [every UE to which data can be transmitted on the HS-DSCH has an associated dedicated physical channel DPCH: Page 129] [no separate carrier will be needed for HSDPA services: see Introducing HSDPA services Page 129].

Hedberg does not explicitly teach applying transmit diversity in sending first signal to user equipment on the dedicated channel as claimed. However, techniques and advantages of applying transmit diversity in the wireless system such as open-loop

or closed-loop transmit diversity and multi-user diversity would have been obvious to one skilled in the wireless art to improve the system performance.

Hiramatsu teaches open-loop transmit diversity applied to DPCH by assigning an antenna of a set of antennas to each one of the plurality of user equipments [for each user, the antenna receiving the highest power will be selected: Dedicated Physical Channel DPCH and Figure 6 on Page 1171].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to apply transmit diversity on DPCH as taught by Hiramatsu to modify Hedberg's system for sending first signals and for assigning antenna for each user as claimed. One of ordinary skill in the art would have been motivated to do this to enhance the capacity, coverage, reliability and improvement of the wireless system.

The method and system as modified does not explicitly teach that first signals and second signals are transmitted simultaneously. Malladi et al. teaches HS-DSCH data and DPCH data are transmitted simultaneously [Figure 6]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to further modify the method to transmit first and second signals simultaneously as claimed. One of ordinary skill in the art would have been motivated to do this in order to transmit both HS-DSCH data and associated DPCH data for each user via corresponding already assigned antenna for each user in providing enhanced high speed data service with efficient resource utilization.

It would have been obvious to one skilled in the art that the method as modified above would teach assigning antennas to user equipments for sending first and second signals by applying transmit diversity and multi-user diversity.

However, modified method does not teach splitting the plurality of user equipments approximately evenly into a plurality of groups and further assigning antenna to approximately evenly grouped users accordingly in the first and second interval as amended in the claim.

Grubeck et al discloses a base station transmits a plurality of user equipments in which each of two antennas are assigned to two users groups which are grouped substantially evenly based on cost function [half of users connected are using the first power amplifier and first antenna element, and the other of users connected are using the second power amplifier and second antenna element: Figures 3 & 4] [Column 8 & 9].

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of invention of made to further modify the method to assign each of the antennas to users groups which are grouped substantially evenly as taught by Grubeck to modify as claimed i.e., transmitting second signals applying multi-user diversity via assigned antenna in the first interval and the second interval. One of ordinary skilled in the art at the time of invention of made for load balancing to result in a high efficiency for the system.

2.2 Claim 6 is rejected for the same reason as stated above in Claim 1 rejection because claimed executable steps substantially read on the corresponding steps of Claim 1. It would have been obvious to one skill in the art that modified system must have claimed computer program for executing the claimed steps because the system applying modified method is computer based system.

2.3 Claims 7 & 8 are rejected for the same reason as stated above in Claim 1 rejection because claimed steps substantially reads on the corresponding steps of Claim 1. Modified system discloses base station (claimed transmitter) for sending of first and second signals to a plurality of user equipments. It would have been obvious to one of ordinary skill in the art that modified base station must have claimed components and scheduler in order to execute corresponding claimed steps because the base station as modified is configured to transmit downlink signals to serving users on corresponding assigned channels via assigned antennas applying transmit diversity and multi-users diversity as stated above in Claim 1 rejection.

2.4 Claim 10 is also rejected for the same reason as stated above in Claim 1 rejection because claimed steps executed by system substantially reads on the corresponding method steps of Claim 1. It would have been obvious to one of ordinary skill in the art that wireless system operating with modified method would comprises claimed components configured to transmit downlink signals to serving users on

corresponding assigned channels via assigned antennas applying transmit diversity and multi-users diversity as stated above in Claim 1 rejection.

2. Claims 3, 4, 5 & 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art: "Evolving WCDMA" by Hedberg et al (hereinafter Hedberg) in view of IEEE published prior art: "Transmit Diversity applied on the CDMA/TDD cellular system" by Hiramatsu et al. (hereinafter Hiramatsu), further in view of Malladi et al. (US 2003/0210668 A1), Grubeck et al. (US006449484B1) and Dahlman et al. (US20020145988A1).

3.1 Regarding Claims 3 & 9, modified system as stated above teaches as claimed in claim 1 and does not explicitly disclose assigning carrier frequency to the dedicated and shared channels. It would have been obvious to one of ordinary skill in the art that dedicated and shared channels must be assigned with carrier frequency because they are communication channels.

Dahlman also teaches assigning carrier frequency from a set of available carrier frequencies [0037]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to assign the carrier frequency to dedicated and shared channels from a set of carrier frequencies as taught by Dahlman frequency assigned method to modify as claimed. One of ordinary skill in the art at the time of invention of made to do this to optimize the communication network.



3.2 Claim 4 is rejected for the same reason as stated above in Claim 3 rejection.

Hedberg also teaches transmitting high speed data using dedicated channels [dedicated channel is suitable for users close to cell borders: page 127] and also teaches using transmit diversity for slow moving user equipment [open-loop transmit diversity: Page 126]. Therefore, it would have been obvious that modified method is also configured to apply transmit diversity to send second signal to users as claimed.

3.3 Regarding Claim 5, modified method also teach closed loop transmit diversity i.e., best antenna is selected for transmission based on channel condition information received by each antenna in uplink slot [Hiramatsu: See Selective Transmit Diversity on Page 1171]. At the time of invention of made, the concept and advantage of applying closed loop diversity in the wireless system is also well known to one of ordinary skill in the art.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

3GPP TS 25.308 v5.2.0 (2002-03)  
3GPP TS 25.211 v3.7.0 (2001-06)  
US 2004/0063436 A1

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AUNG WIN whose telephone number is (571)272-7549. The examiner can normally be reached on Monday-thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung T Win/

Examiner, Art Unit 2617

/Patrick N. Edouard/

Supervisory Patent Examiner, Art Unit 2626